

**UNITED STATES DEPARTMENT OF COMMERCE****Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231



| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|-----------------|-------------|----------------------|---------------------|
|-----------------|-------------|----------------------|---------------------|

09/436,159 11/09/99 BARBERA-GUILLEM

E B-13-NP

HM12/0921

**EXAMINER**

CHAKRABARTI, A

ART UNIT

PAPER NUMBER

1655

6

**DATE MAILED:**

09/21/00

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

## Office Action Summary

|                               |  |
|-------------------------------|--|
| Application No.<br>09/436,159 | Applicant(s)<br>Barbera-Guillem et al. |
| Examiner<br>Arun Chakrabarti  | Group Art Unit<br>1655                 |



*Responsive to communication(s) filed on Sep 6, 2000*

*This action is FINAL.*

*Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.*

*A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).*

### Disposition of Claims

*Claim(s) 1-3, 5, 7-12, and 23-34* is/are pending in the application.

*Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.*

*Claim(s) \_\_\_\_\_ is/are allowed.*

*Claim(s) 1-3, 5, 7-12, and 23-34* is/are rejected.

*Claim(s) \_\_\_\_\_ is/are objected to.*

*Claims \_\_\_\_\_ are subject to restriction or election requirement.*

### Application Papers

*See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.*

*The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.*

*The proposed drawing correction, filed on \_\_\_\_\_ is  approved  disapproved.*

*The specification is objected to by the Examiner.*

*The oath or declaration is objected to by the Examiner.*

### Priority under 35 U.S.C. § 119

*Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).*

*All  Some\*  None of the CERTIFIED copies of the priority documents have been*

*received.*

*received in Application No. (Series Code/Serial Number) \_\_\_\_\_.*

*received in this national stage application from the International Bureau (PCT Rule 17.2(a)).*

*\*Certified copies not received: \_\_\_\_\_*

*Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).*

### Attachment(s)

*Notice of References Cited, PTO-892*

*Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_*

*Interview Summary, PTO-413*

*Notice of Draftsperson's Patent Drawing Review, PTO-948*

*Notice of Informal Patent Application, PTO-152*

**--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---**

Art Unit: 1655

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1-3, 5, 7 and 23-28 are rejected under 35 U.S.C. 103 (a) over Weiss et al. (U.S. Patent 5,990,479) (November 23, 1999) in view of Favie et al. (U.S. Patent 4,535,130) (August 13, 1985) further in view of Hille et al. (U.S. Patent 4,496,675) (January 29, 1985).

Weiss et al teach a functionalized nanocrystal-labeled nucleobase comprising a functionalized nanocrystal operably linked to a nucleobase (Abstract, Figure 2, Figure 4 and column 6, lines 50-67);

Art Unit: 1655

and wherein the functionalized nanocrystal comprises one or more reactive functionalities, which are used to operably link the functionalized nanocrystal to the nucleobase (Column 5, line 62 to column 6, line 47).

Weiss et al teach a functionalized nanocrystal-labeled nucleobase further comprising a linker which operably links the functionalized nanocrystal to the nucleobase (Figures 1-4 and column 7, line 7 to column 8, line 59 and Example 1, column 9, line 64 to column 10, line 24).

Weiss et al teach a functionalized nanocrystal-labeled nucleobase wherein the one more reactive functionalities is selected from the amino group and the thiol group (Column 8, lines 15-45).

Weiss et al teach a functionalized nanocrystal-labeled nucleobase wherein the functionalized nanocrystal is capped with a capping compound comprising a mercaptofunctionalized amine, wherein the functionalized nanocrystal further comprises at least one additional coating comprising one or more reactive functionalities, and wherein the at least one coating is selected from the maleimide derivative (Column 8, lines 15-45).

Weiss et al do not teach the capping of nanocrystal with mercaptocarboxylic acid having the formula  $HS(CH_2)_n X$ .

Favie et al teach the use of mercaptocarboxylic acid having the formula  $HS(CH_2)_n X$  as capping compound (Abstract, Column 2, lines 28-33, Column 6, line 42 to column 8, line 18 and Example 17).

It would have been *prima facie* obvious to one having ordinary skill in the art

Art Unit: 1655

at the time the invention was made to substitute and combine mercaptocarboxylic acid capping model of Favie et al in the nanocrystal method of Weiss et al since Favie et al. state , "Thus the invention is highly utilizable, for example, for the fixation of U.V. absorbants or of colourants on various polymers, the latter also comprising copolymers. One of the important applications of the present invention concerns polymers carrying mercaptan groups. It relates more particularly to the production of mercaptan polymers, in which the -SH function is located in a chain adjacent a carboxylic group, the latter being fixed to the macromolecule of a polymer (Column 2, lines 24-33)". An ordinary practitioner would have been motivated to combine mercaptocarboxylic acid coating model of Favie et al in the nanocrystal method of Weiss et al in order to achieve the express advantages noted by Favie et al. of a system which provides a highly utilizable method for the fixation of U.V. absorbants or of colourants on various polymers, the latter also comprising copolymers as well as important applications concerning polymers carrying mercaptan groups which relates more particularly to the production of mercaptan polymers, in which the -SH function is located in a chain adjacent a carboxylic group, the latter being fixed to the macromolecule of a polymer

Weiss et al in view of Favie et al do not teach the functionalized nanocrystal-labeled nucleobase wherein the least one additional coating comprises an amino acid containing a diaminocarboxylic acid.

Hille et al teach the use of coating comprises an amino acid containing a diaminocarboxylic acid (Column 4, lines 10-15 and claim 6).

Art Unit: 1655

It would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to substitute and combine diaminocarboxylic acid coating model of Hille et al in the nanocrystal containing novel mercaptocarboxylate method of Weiss et al in view of Favie et al. since Hille et al. states , “They produce coatings having excellent solvent resistance and excellent adhesion, even to difficult substrate (Abstract, last sentence)”. An ordinary practitioner would have been motivated to combine diaminocarboxylic acid coating model of Hille et al in the nanocrystal containing novel mercaptocarboxylate method of Weiss et al in view of Favie et al. in order to achieve the express advantages noted by Hille et al. of a system which can produce coatings having excellent solvent resistance and excellent adhesion, even to difficult substrate.

3. Claims 1-3, 5, 7, 8-12 and 23-34 are rejected under 35 U.S.C. 103 (a) over Weiss et al. (U.S. Patent 5,990,479) (November 23, 1999) in view of Favie et al. (U.S. Patent 4,535,130) (August 13, 1985) further in view of Hille et al. (U.S. Patent 4,496,675) (January 29, 1985). further in view of Stratagene catalog ((1988, Page 39).

Weiss et al. in view of Favie et al. further in view of Hille et al teach the plurality of species of functionalized nanocrystal-labeled nucleobases including all the reagents and linkers.

Weiss et al. in view of Favie et al. further in view of Hille et al do not teach the motivation to combine all the reagents of the plurality of species of functionalized nanocrystal-labeled nucleobases in the form of a kit.

Stratagene catalog teaches a motivation to combine reagents into kit format (page 39).

Art Unit: 1655

It would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to combine all the reagents required to form the plurality of species of functionalized nanocrystal-labeled nucleobases into a kit format as discussed by Stratagene catalog since the Stratagene catalog teaches a motivation for combining reagents of use in an assay into a kit, "Each kit provides two services: 1) a variety of different reagents have been assembled and pre-mixed specifically for a defined set of experiments. Thus one need not purchase gram quantities of 10 different reagents, each of which is needed in only microgram amounts, when beginning a series of experiments. When one considers all of the unused chemicals that typically accumulate in weighing rooms, desiccators, and freezers, one quickly realizes that it is actually far more expensive for a small number of users to prepare most buffer solutions from the basic reagents. Stratagene provides only the quantities you will actually need, premixed and tested. In actuality, the kit format saves money and resources for everyone by dramatically reducing waste. 2) The other service provided in a kit is quality control". (page 39, column 1).

#### *Response to Arguments*

4. Applicant's arguments with respect to all pending claims have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 1655

*Conclusion*

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arun Chakrabarti, Ph.D. whose telephone number is (703) 306-5818. The examiner can normally be reached on 7:00 AM-4:30 PM from Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones, can be reached on (703) 308-1152. The fax phone number for this Group is (703) 305-7401.

Art Unit: 1655

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.



Arun Chakrabarti,  
Patent Examiner,

September 19, 2000



JEFFREY FREDMAN  
PRIMARY EXAMINER